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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/777,297      | 02/12/2004  | Guy-ho Lyu           | 5649-1206           | 5272             |

7590 09/15/2006

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EXAMINER

SOWARD, IDA M

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2822

DATE MAILED: 09/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                            |  |
|------------------------------|-------------------------------|----------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/777,297 | Applicant(s)<br>LYU ET AL. |  |
|                              | Examiner<br>Ida M. Soward     | Art Unit<br>2822           |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 12-16 and 18-31 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-31 is/are allowed.
- 6) ☒ Claim(s) 12, 13, 18, 19 and 21 is/are rejected.
- 7) ☒ Claim(s) 14-16, 20 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

This Office Action is in response to the Applicants' amendment filed July 21, 2006.

### *Response to Amendment*

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### *Claim Objections*

Claims 20-21 are objected to because of the following informalities: "conductive layer" should have been conductive line pattern in both claims. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 12, 18-19 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Tsai et al. (US 6,613,623 B1).

In regard to claim 12, Tsai et al. teach a semiconductor device comprising: a semiconductor substrate 10; a gate line including a gate insulation pattern 16 and a gate electrode 18 which are sequentially stacked on the semiconductor substrate 10; a spacer 24 formed on a sidewall of the gate line 16 & 18; and a conductive line pattern 30 disposed on the gate line 16 & 18; and an interlayer dielectric 34 on the semiconductor substrate 10 having a top surface that is coplanar with a top surface of the gate line 16 & 18; wherein the conductive line pattern 30 is parallel to the gate line 16 & 18 and electrically connected to the gate electrode 18 (Figure 6, columns 2-3, lines 12-67 and 1-64, respectively).

In regard to claim 18, Tsai et al. teach the conductive line pattern 30 having at least the same length as the gate line 16 & 18 (Figure 6).

In regard to claim 19, Tsai et al. teach the conductive line pattern 30 being made of metal (Figure 6, column 2, lines 46-48).

In regard to claim 21, Tsai et al. teach the conductive line pattern 30 decrease the resistance of the gate electrode 18 (Figure 6, column 3, lines 46-49).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai et al. (US 6,613,623 B1) as applied to claims 12 and 18 above, and further in view of Buynoski (US 6,518,113 B1).

Tsai et al. teach all mentioned in the rejection above.

However, Tsai et al. fail to teach the gate electrode comprising a doped polysilicon layer.

Buynoski teaches a gate electrode 28 comprising a doped polysilicon layer (Figure 7, column 12, lines 36-42).

Therefore, it should have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device structure as taught by Tsai et al. with the semiconductor device having a gate electrode comprising a doped polysilicon layer as taught by Buynoski to obtain high integration density semiconductor devices (column 1, lines 15-18).

#### ***Allowable Subject Matter***

Claims 22-31 are allowed.

Claims 14-16 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

Applicant's arguments with respect to claims 12-16 and 18-31 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to semiconductor devices:

Lee (US 2001/0055867 A1)

Radens et al. (US 6,388,294 B1)

Shao et al. (US 6,300,201 B1)

Xiang et al. (US 6,465,309 B1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ida M. Soward whose telephone number is 571-272-1845. The examiner can normally be reached on Monday - Thursday 6:30am to 5:00pm.

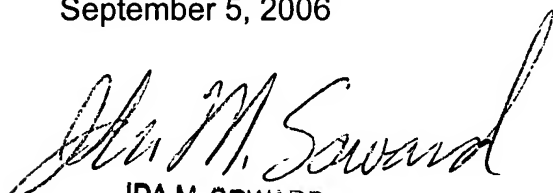
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra V. Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

IMS

September 5, 2006



IDA M. SOWARD  
PRIMARY EXAMINER